

Application No. 10/533,177

AMENDMENTS TO THE CLAIMS

A detailed listing of all claims that are, or were, in the present application, irrespective of whether the claim(s) remains under examination in the application are presented below. The claims are presented in ascending order and each includes one status identifier. Those claims not cancelled or withdrawn but amended by the current amendment utilize the following notations for amendment: 1. deleted matter is shown by strikethrough for six or more characters and double brackets for five or less characters; and 2. added matter is shown by underlining.

1. (Currently Amended) A method of welding together two metal work-pieces, the method including the following steps:

providing two metal work-pieces,

preparing a portion of each work-piece, the preparation including a step of

[[the]] performing[[ance of]] a surface treatment, including a friction stir welding process, that results in a region extending from the exterior surface into the work-piece having a grain structure that is finer than the grain structure of the work-piece outside that region,

and then

welding together the work-pieces by means of a fusion welding process that joins the respective prepared portions of the two work-pieces,

wherein said region extends into the work-piece to a depth that exceeds the depth of material that is caused to melt during the fusion welding process.

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2. (Original) A method according to claim 1, wherein the surface treatment is conducted to a depth of at least 10mm into each work-piece and wherein the depth of the joint to be fusion welded is greater than 50mm.

3. (Currently Amended) A method according to claim 1, wherein the surface treatment is performed such that there is at least one cross-section ~~in which the difference between the grain size number of the~~ that extends across both (i) material in the work-piece outside the region that has been subjected to said surface treatment, such material having a grain size number, G1, and the grain size number of the (ii) material in the work-piece inside the region that has been subjected to said surface treatment, such material having a grain size number, G2, the cross-section being such that the difference between the grain size numbers G1 and G2 is greater than or equal to 4.

4. (Original) A method according to claim 1, wherein the step of preparing the work-pieces includes a step of treating or machining the surface-treated regions of each work-piece to produce a surface on one work-piece that can be fusion welded to a corresponding surface on the other work-piece.

5. (Original) A method according to claim 1, wherein the fusion welding process is performed by means of an electron beam welding process.

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6. (Currently amended) A method according to claim 1, wherein the work-pieces are made from aluminum alloys.
7. (Original) A method according to claim 1, wherein the work-pieces are made from cold-worked metal.
8. (Original) A method according to claim 1, wherein the work-pieces are suitable for use in the manufacture of an aircraft component.
9. (Original) A method of welding together two work-pieces, the method including the following steps:
- providing two metal work-pieces,
 - friction stir welding a region of each work-piece,
 - preparing the friction stir welded regions of each work-piece to produce a surface on one work-piece that can be fusion welded to a corresponding surface on the other work-piece, and
 - fusion welding the respective prepared surfaces of the two work-pieces together, thereby joining the work-pieces.
10. (Currently Amended) A method of welding together two metal work-pieces, the method including the following steps:
- providing two metal work-pieces,

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preparing a portion of each work-piece, the preparation ~~including performing~~ of a surface treatment that results in a region extending from the exterior surface into the work-piece having a grain structure that is finer than the grain structure of the work-piece outside that region, and

welding together the work-pieces by means of a fusion welding process that joins the respective prepared portions of the two work-pieces,

wherein said region extends into the work-piece to a depth that exceeds the depth of material that is caused to melt during the fusion welding process.

11. (Original) A method according to claim 1, wherein the work-pieces, when welded together, form at least part of a block of metal, the method further including the step of manufacturing an aircraft component, wherein the aircraft component is machined from the block of metal.

12. (Original) A method according to claim 9, wherein the work-pieces, when joined, form at least part of a block of metal, the method further including the step of manufacturing an aircraft component, wherein the aircraft component is machined from the block of metal.

13. (Original) A method according to claim 10, wherein the work-pieces, when welded together, form at least part of a block of metal, the method further including the step of manufacturing an aircraft component, wherein the aircraft component is machined from the block of metal.

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14. (Original) A method according to claim 1, wherein the method further includes a step of making an aircraft component from the work-pieces when welded together, and a step of manufacturing an aircraft including the aircraft component.

15. (Original) A method according to claim 9, wherein the method further includes a step of making an aircraft component from the work-pieces when welded together, and a step of manufacturing an aircraft including the aircraft component.

16. (Original) A method according to claim 10, wherein the method further includes a step of making an aircraft component from the work-pieces when welded together, and a step of manufacturing an aircraft including the aircraft component.

17-21. (Cancelled)

Please add new claim 22 as follows:

22. (New) A method of manufacturing an aircraft component, comprising the steps of

- (a) providing two or more metal work-pieces,
- (b) friction stir welding at least one region of each work-piece thereby producing a friction stir welded region extending from the exterior surface of the work-piece into the work-piece by a distance greater than 10mm, the friction stir welded region having a grain structure that is finer than the grain structure of the work-piece outside that region,

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(c) skimming the friction stir welded region of each work-piece to produce a substantially flat surface,

(d) arranging the work-pieces so that the substantially flat surface of each work-piece abuts the substantially flat surface of another work-piece,

(e) fusion welding the abutting substantially flat surfaces, thereby joining the workpieces together to form a block of metal, the fusion welding causing material to melt at a depth from the exterior surface of the work-pieces of greater than 50mm, and

(f) after step (e), machining metal away from the block of metal to form an aircraft component.